

REMARKS

Claims 1- 10 remain pending in this application with claims 5 and 10 being cancelled by this response and claims 1-4 and 6-9 being amended by this response. Claims 1-4 and 6-9 have been amended to clarify the present claimed invention. Thus, it is respectfully submitted that no new matter has been added.

Rejection of Claims 1-7 and 9-10 under 35 U.S.C. 102(b)

Claims 1-7 and 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Sievenpiper (US 6,864,848 B2).

The present claimed invention provides a radiation diversity antenna structure. The structure includes a substrate having a first and second side, with a conductive layer disposed on the first side. A radiating element is etched in the conductive layer. The radiating element includes a first arm formed of a radiating slot-line and at least one second arm formed of a radiating slot-line. The second arm extends the first arm in a tree structure. A feed line is coupled to the middle of the first arm and a switching means is positioned in at least one of the second arms to control the coupling of the first and second arms with the feed line. Claim 1 contains features similar to those discussed above.

“Within the context of transmissions inside enclosed or semi-enclosed environments, the electromagnetic waves undergo fading phenomena related to the multiple paths resulting from numerous reflections of the signal off the walls...or other surfaces...In order to combat these fading phenomena, a well known technique is the use of space diversity...[T]his technique consists in using for example a pair of antennas with wide spatial coverage such as two antennas of slot type...that are linked by feed lines to a switch, the choice of antenna being made as a function of the level of the signal received. The use of this type of diversity requires a minimum spacing between the radiating elements so as to ensure sufficient decorrelation of the channel response seen through each radiating element. Therefore, this solution has the

drawback of being...bulky. To remedy this bulkiness problem, [the present claimed invention provides] the use of antennas exhibiting radiation diversity...obtained by switching between radiating elements placed in proximity to one another” (Page 1, lines 10-26). “[T]he radiation diversity antenna consists chiefly of a radiating element of the slot-line type formed of arms in an H structure” (Page 3, lines 31-32). “To obtain an antenna with an H structure...making it possible to obtain radiation diversity, switching means are positioned in the slot-line constituting the arm in such way as to control the electromagnetic coupling between the said arm and the feed line” (Page 4, lines 18-21). “Moreover...metal inserts are placed in short-circuit zones of the arms of slot-line type, namely at the level of the junctions of the arms” (Page 4, lines 29-31).

Sievenpiper describes “a slot antenna for receiving and/or transmitting a RF signal at a desired one of a plurality of center frequencies. The slot antenna includes at least one conductive sheet having a slot defined therein, the slot...having a first end which is electrically closed and a second end which is electrically opened. A plurality of switch means are mounted along the slot, each of the plurality of switch members acting, when closed, to couple the at least one conductive sheet on one side of the slot to the at least one conductive sheet on a second side thereof. A feed point is provided for coupling an RF signal to and from the at least one conductive sheet” (Col. 4, lines 53-65).

The Office Action asserts that Sievenpiper, as described in figures 10, 11a and 11b, discloses the principles of the present claimed invention. The Applicant respectfully disagrees. The present claimed invention provides a first arm formed of a radiating slot-line and a second arm extending from the first arm in a tree structure. The present claimed invention provides a switching means, such as a diode (d1, d2, d3 and d4), positioned within the second arm to control its coupling with the feed line. In this way, having a first arm formed by a slot-line and fed by the feed line that is unique from the second arm that receives the switching means, the present claimed invention provides an antenna exhibiting radiation diversity that is not bulky.

In contrast, in figure 10 Sievenpiper describes two separate radiation antennae, each having one arm connected to a feed line (Col. 12, lines 27-39). Thus, figure 10 of Sievenpiper is wholly unlike the present claimed invention, as figure 10 of Sievenpiper is concerned with two antennae each having one arm and the present claimed invention is concerned with one antenna having two arms. Similarly, figures 11a and 11b of Sievenpiper do not disclose the principles of the present claimed invention. In figures 11a and 11b, Sievenpiper describe “a crossed slot cavity backed antenna with crossed open-ended slots 20. Each slot has a series of MEMS switches at it[s] ends [that]...adjust[s] the resonance frequency of the associated slot” (Col. 12, lines 40-42). A coaxial feed 34 is then connected to each slot 20 (Figure 11b). This is wholly unlike the present claimed invention, which describes a second arm having a switching means that extends from a first arm that is a slot-line fed by the feed line. In fact, figures 11a and 11b of Sievenpiper are fundamentally different than the present claimed invention, as they are concerned with four slots that are connected to each other wherein **each slot is connected to a feed line and each slot contains switching means** this is unlike the present claimed invention which is concerned with **a first arm connected to a feed line and a second attached arm containing switching means**. Thus, while Sievenpiper is concerned with four **identical** slots attached to each other, the present claimed invention is concerned with two **distinct** slots. In this way, the present claimed invention only requires one slot to be connected to the feed line to create an antenna selectively using two radiating slot-lines. Therefore, it is respectfully submitted that Sievenpiper neither discloses nor suggests “a radiating element etched into said conductive later, said radiating element comprising a first arm formed of a radiating slot-line and at lease a second arm formed of a radiating slot-line, said second arm extending said first arm in a tree structure” as recited in the present claimed invention, Sievenpiper also neither discloses nor suggests “switching means positioned in at lest one of the second arms to control the coupling of the first and second arms with the feed line” as recited in claim 1 of the present invention.

Additionally, Sievenpiper is not concerned with the design structure as in the present claimed invention. “[T]he radiation diversity antenna [of the present claimed invention] consists chiefly of a radiating element of the slot-line type formed of arms in

an H structure” (Page 3, lines 31-32). Thus, the feed line is coupled to the middle of the first arm in the creation of the H structure. However, Sievenpiper describes a feed line connected at the end of the slot (see Figures 1-11). Therefore, Sievenpiper neither discloses nor suggests “a feed line coupled to the middle of said first arm” as recited in claim 1 of the present invention.

As claims 4-6 and 9, are dependant on independent claim 1, it is respectfully submitted that they are allowable for the same reasons as discussed above regarding claim 1.

In view of the above remarks and amendments to the claims it is respectfully submitted that there is no 35 USC 112 compliant enabling disclosure in Sievenpiper showing the above discussed features. It is thus further respectfully submitted that claims 4-6 and 9 are not anticipated by Sievenpiper. It is thus, further respectfully submitted that this rejection is satisfied and should be withdrawn.

Rejection of Claim 8 under 35 U.S.C. 103(a)

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sievenpiper.

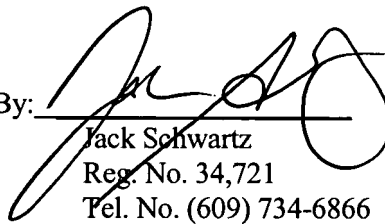
As claim 8 is dependant on independent claim 1, it is respectfully submitted that it is allowable for the same reasons as discussed above in regards to claim 1. In view of the above remarks it is respectfully submitted that claim 8 is also allowable.

In view of the above remarks and amendments to the claims it is respectfully submitted that there is no 35 USC 112 compliant enabling disclosure in Sievenpiper showing the above discussed features. It is thus further respectfully submitted that claim 8 is not anticipated by Sievenpiper. It is thus, further respectfully submitted that this rejection is satisfied and should be withdrawn.

The applicant respectfully submits, in view of the above arguments, that the all arguments made by the Examiner have been addressed and this rejection should be withdrawn. Therefore, the applicant respectfully submits that the present claimed invention is patentable.

No fee is believed due. However, if a fee is due, please charge the additional fee to Deposit Account 07-0832.

Respectfully submitted,
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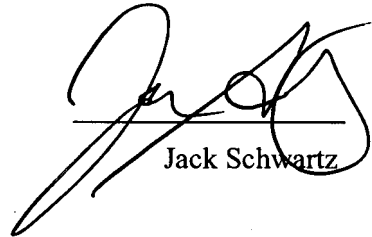
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